

Claims

[c1] What is claimed is:

1.A method for processing an image to increase sharpness of the image without changing hue characteristics, the method comprising:

- (a)performing a transformation process to transform an original image signal into CIE XYZ colorimetric channels;
- (b)forming a luminance channel Y;
- (c)applying a filter on the luminance channel Y to obtain a processed luminance channel Y";
- (d)computing processed colorimetric channels X" and Z" based on the processed luminance channel Y"; and
- (e)performing an inverse transformation process to transform the processed colorimetric channels X"Y"Z" into a processed image signal.

[c2] 2.The method of claim 1 wherein the filter applied in step (c) is an unsharp masking (USM) filter.

[c3] 3.The method of claim 1 wherein the filter applied in step (c) is a sharpness filter.

[c4] 4.The method of claim 1 wherein in step (a) the transformation process comprises transforming RGB values of

the original image signal into CIE XYZ colorimetric channels.

- [c5] 5.The method of claim 4 wherein in step (e) the inverse transformation process comprises transforming the processed colorimetric channels X"Y"Z" into R"G"B" values of the processed image signal.
- [c6] 6.The method of claim 1 wherein in step (a) the transformation process comprises transforming CMYK values of the original image signal into CIE XYZ colorimetric channels.
- [c7] 7.The method of claim 6 wherein in step (e) the inverse transformation process comprises transforming the processed colorimetric channels X"Y"Z" into C"M"Y"K" values of the processed image signal.
- [c8] 8.The method of claim 1 wherein in step (d) a relationship between the processed colorimetric channel X" and the colorimetric channel X satisfies the equation
$$X" = (X/Y) * Y".$$
- [c9] 9.The method of claim 1 wherein in step (d) a relationship between the processed colorimetric channel Z" and the colorimetric channel Z satisfies the equation
$$Z" = (Z/Y) * Y".$$

[c10] 10. An image processing apparatus for implementing the method of claim 1.